Rapporto di test n° TR_17335
Test report n° TR_17335

Immunità ai disturbi condotti
Immunity to conducted disturbances
Rif: procedura di test IL 22009
Ref: test procedure IL 22009

Dispositivo testato ***Tested sample***	COMPACT 32 500 M J1900 ACL MD SCL
P/N ***P/N***	993201600101
Modelli derivati ***Derived models***	/
Persone presenti ***Attendees***	/
Costruttore ***Manufacturer***	AESYS S.p.A. - Via Pastrengo 7c 24068 Seriate (BG) Italia Tel: +39 0352924111 www.aesys.com
Laboratorio ***Test laboratory***	AESYS S.p.A. - Via Pastrengo 7c 24068 Seriate (BG) Italia Tel: +39 0352924111 www.aesys.com
Data del test ***Test date***	04/12/2017
Prima emissione ***First issue***	04/12/2017

Tecnico di laboratorio ***Test engineer***	Sergio Fustinoni	……...
Responsabile di laboratorio ***LAB Manager***	Egidio A. Fogliata	……...
Revisione ***Revision***	00	Primo rilascio *First release*

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1 DUT - INFORMAZIONI GENERALI
DUT - GENERAL PRODUCT INFORMATION

The DUT (Device Under Test), named **COMPACT 32 500 M J1900 ACL MD SCL** is a variable message panel based on TFT technology used for video-information in railways applications.

DUT – COMPACT 32 500 M J1900 ACL MD SCL

DUT – Product identification label

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2 NORMATIVE DI RIFERIMENTO
REFERENCE NORMATIVE

All the tests are managed according the European standard **EN 50121-4:** *Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signalling and telecommunications apparatus.*

3 PROCEDURA DI TEST DI RIFERIMENTO
REFERENCE TEST PROCEDURE

The test was performed following the Aesys internal reference procedure named *IL 22009 Immunity to main supply disturbances.*

4 STRUMENTAZIONE UTILIZZATA PER IL TEST
USED TEST MEASUREMENT INSTRUMENTS

Description	Model	Manufacturer	Serial n°	Calibration n°	Calibration date
Conducted immunity generator	CWS 500N	em test	V1021106677	ISO 00070/17	29/01/2017
Network CDN	M2/M3 N	em test	0610-14	ISO 00804/17	04/2017
Electromagnetic injection clamp	EM101	Lüthi	35985	ISO 00070/17	29/01/2017

5 PARAMETRI DI TEST
TEST PARAMETERS

The test method is compliant to the requirements of standard **EN 61000-4-6**: *Electromagnetic compatibility (EMC) Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields.*

Test setup: A ground reference plane copper with 0.5 mm thickness, is positioned on the laboratory floor.
The DUT is tested within its intended operating and climatic conditions.
The test is performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF input ports of the coupling devices are terminated by a 50Ω load resistor.

Levels: 10 V RMS
Frequency range: From 150kHz to 80MHz
Modulation: 1kHz 80% AM
Rate of sweep: 1% of the preceding frequency value
Dwell time: 0.5s

Environmental conditions : Temperature range: 15°C to 35°C
Relative humidity: 25 to 75%
Pressure: 860 to 1060hPa

Test measurements uncertainty: Amplitude: 1.686V
Frequency of modulation: 0.01kHz

The measurement uncertainties stated in this document are estimated as extended uncertainty obtained multiplying the standard uncertainty by the coverage factor *k* corresponding to a confidence level of about 95%.

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6 REGISTRAZIONE TEST
TEST RECORDING

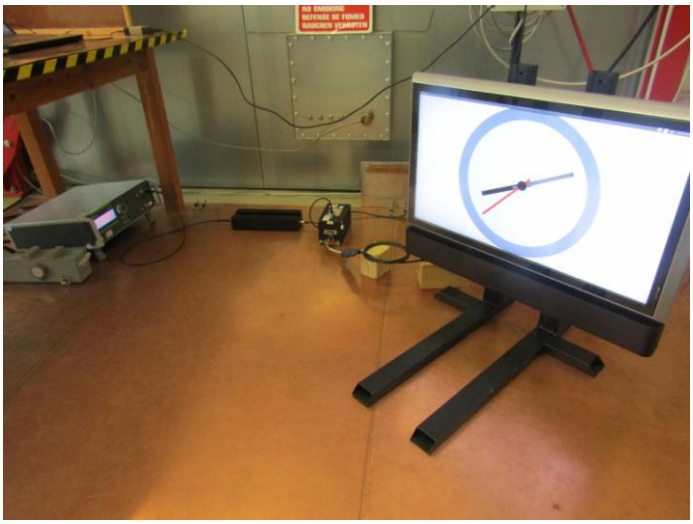
6.1 Impostazione test
Test setup

Test	Performance criteria	Result	Verdict
Environmental temperature	Between +15°C and +35°C	+24.3°C	**Passed**
Relative humidity	Between 25% and 75%	27%	**Passed**
Pressure	Between 860 and 1060hPa	1020hPa	**Passed**
Functionality	Correct operation and data communications	Dynamic image always displayed Correct data communication	**Passed**

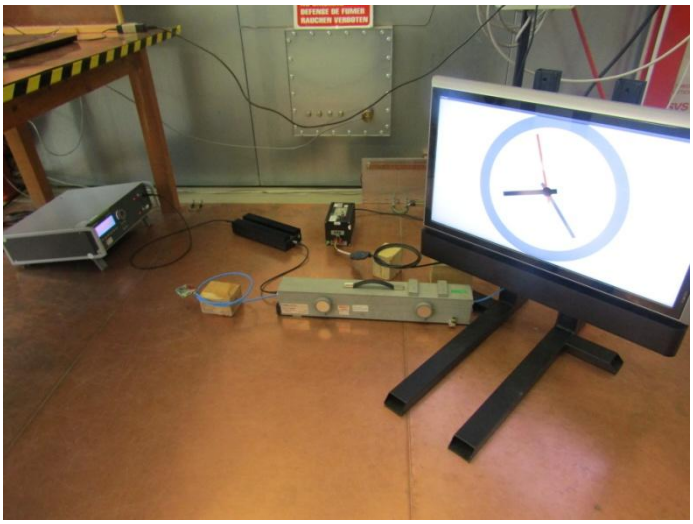
The device is placed on a bench, switched on as during its normal operating activities.
It is scanned an unmodulated carrier from 0.15MHz to 80MHz (with 10V amplitude RMS modulation 80%, 1kHz).
The conducted immunity has been executed on the power supply port in accordance with standard EN 61000-4-6.
Power and data cables are connected as required for normal operation.

The conducted immunity has been executed on the following ports:

- Port power supply
- Port communication data (I/O)



Conducted immunity on power port



Conducted immunity on communication data port (I/O)

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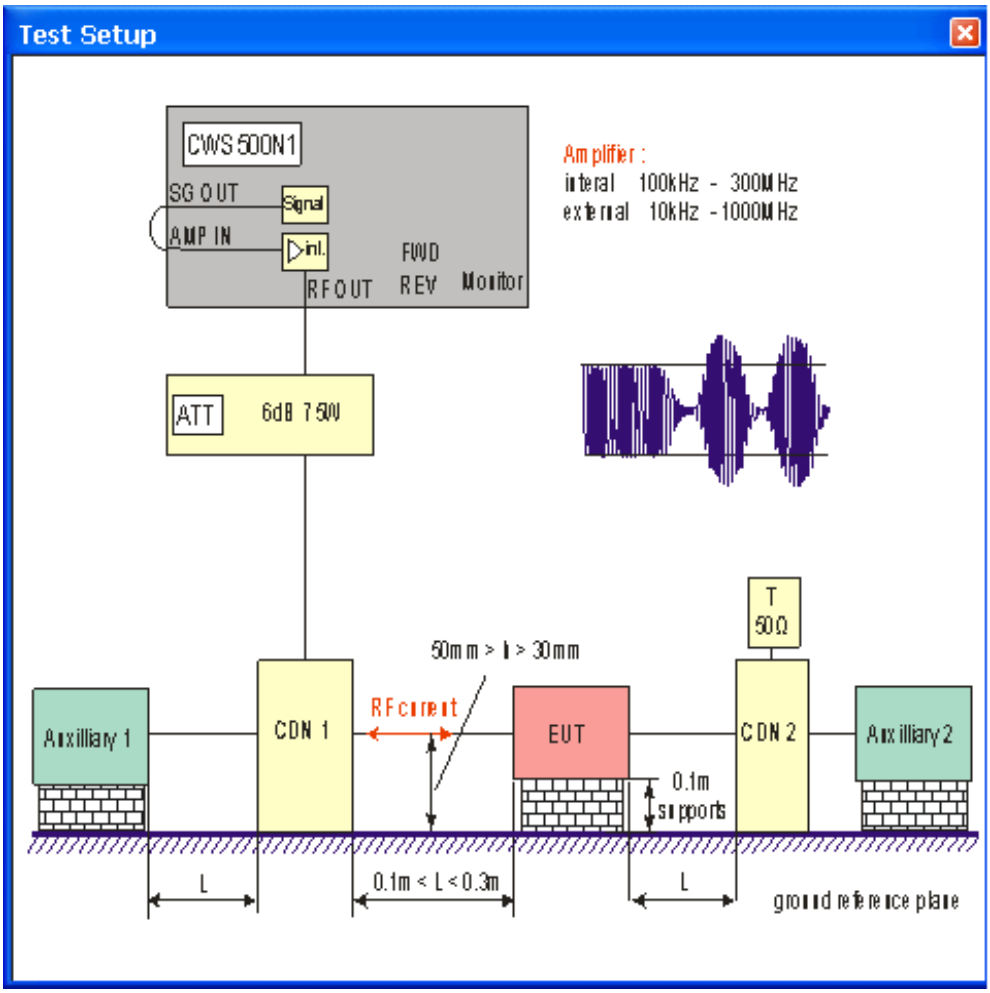
6.2 Immunità condotta sulla porta di alimentazione
Conducted immunity on power port

The test is conducted with the monitor switched on as during its normal operational activity.
Below it is showed the configuration for the test on the power port.



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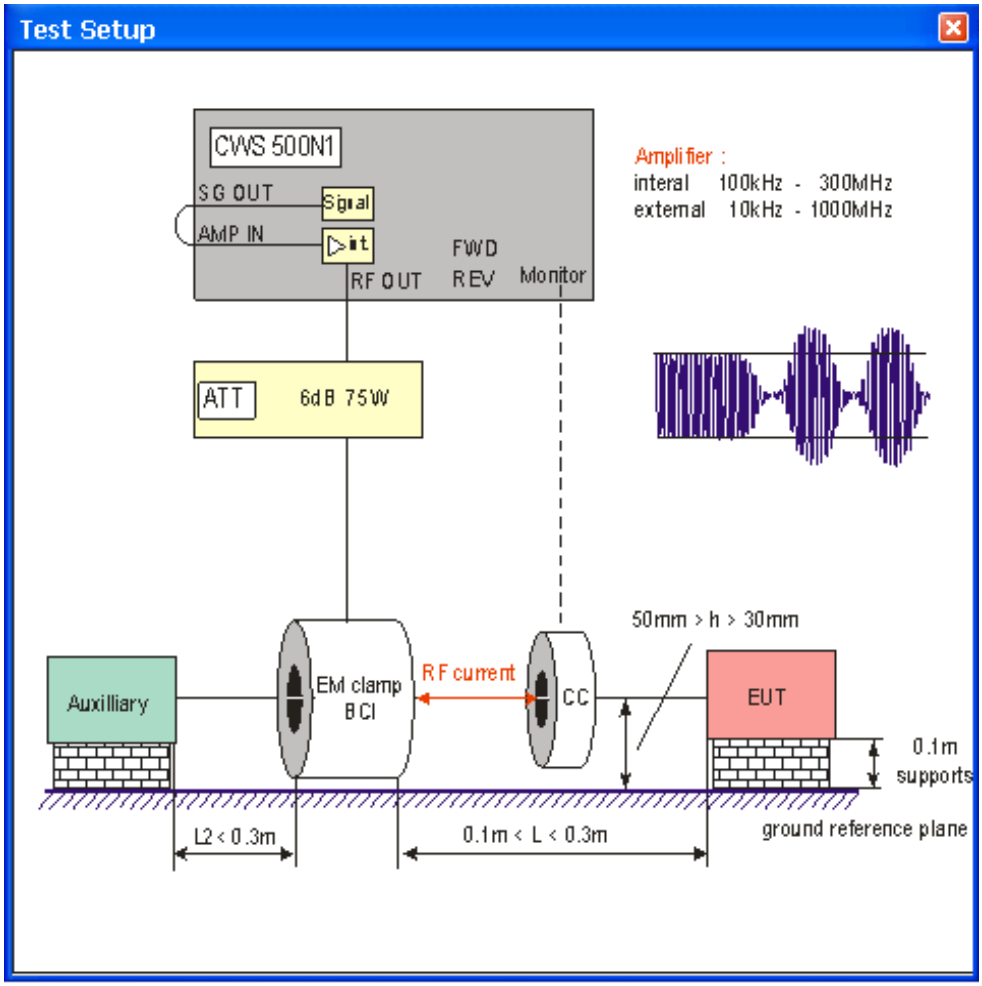
6.3 Immunità condotta sulla porta di comunicazione (I/O)

Conducted immunity on communication data port (I/O)

The test is conducted with the monitor switched on as during its normal operational activity. The communication between the monitor and an external computer is checked during the execution of the test. Below it is showed the configuration for the test on the input / output port.



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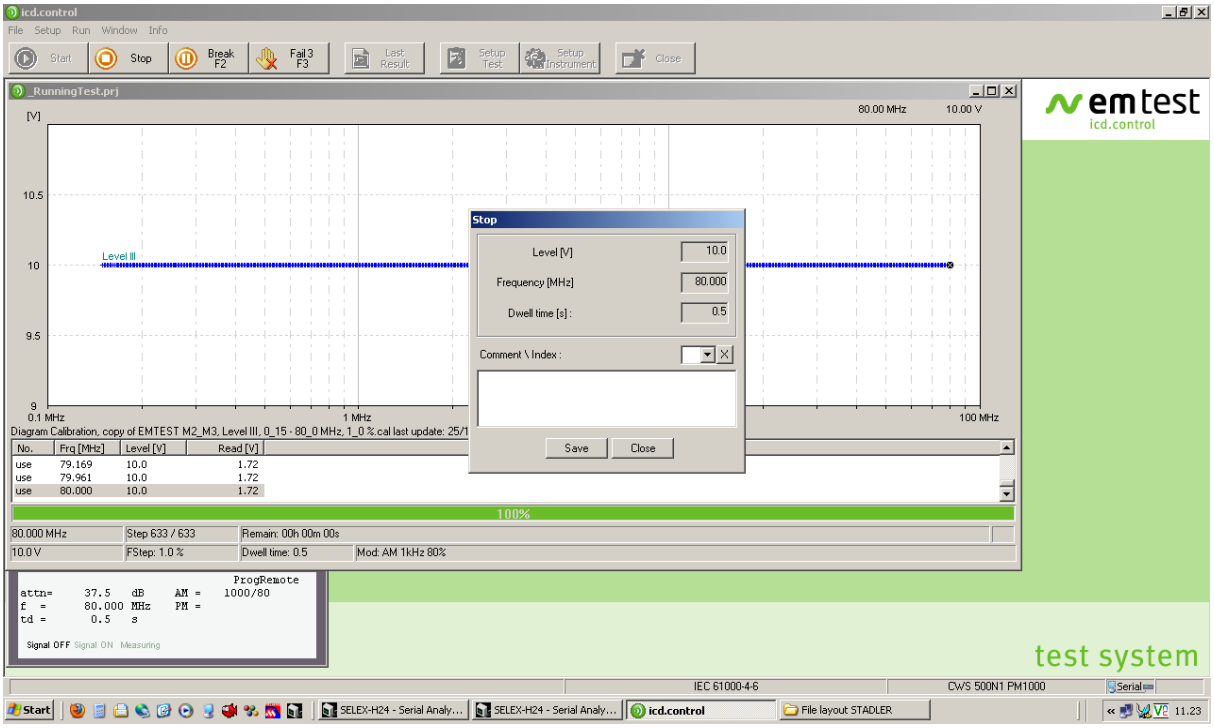

Main menu of the software "Emtest" used to control the conducted immunity generator

7 ESITO DEL TEST
TEST RESULT

Test	Required	Result	Verdict
Conducted immunity on power port	No functional degradation during the test	No functional degradation during the test	**Passed**
Conducted immunity on communication data port (I/O)	No functional degradation during the test	No functional degradation during the test	**Passed**

FINE DEL REPORT
End of test report

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